UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,281	03/12/2004	Yoshiyuki Yanagisawa	119084	5182

25944 7590 04/18/2006

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
SCHECHTER, ANDREW M	
ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/798,281	YANAGISAWA, YOSHIYUKI	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *4,5,9,16,17 and 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-8,10-15,18-20 and 22-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/12/04,7/13/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *IDS 7/27/04*.

DETAILED ACTION

Drawings

1. Figure 10 should be designated by a legend such as --Prior Art-- or --Related Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

3. Claims 1 and 12 are objected to because of the following informalities: "a plurality of liquid crystal panels" in lines 2-3 and "the plurality of liquid crystal panels" in lines 3-4 should be "a liquid crystal panel" and "the liquid crystal panel" since each of the optical modulator units is disclosed as having only one liquid crystal panel. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-3, 6-8, 10, 11, 13-15, 18-20, 22, and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "a first exit polarizer plate arranged at an exit side and a second exit polarizer plate arranged at an incident side of each incident surface". This is either an incorrect description of the invention or an unnecessarily confusing one. In the light path, the light first reaches the second exit polarizer plate [934G], which is at the exit side of the liquid crystal panel and at the incident side of the polarizing plates, but far from the "incident side of each incident surface". The light then reaches the first exit polarizer plate, which is at an exit side of the polarizing plates, but not at an exit side of the liquid crystal panel or anything else, and which is also better described as being at the "incident side of each incident surface". Thus, it appears that the recited description of these locations has been flipped. For examining purposes, it is assumed that "a first exit polarizer plate arranged at an incident side of each incident surface and a second exit polarizer plate arranged at an exit side of the liquid crystal panel" is intended.

The other claims depend from claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2, 12-14, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yajima et al.*, US 2002/0126228 in view of *Numata et al.,* U.S. Patent No. 6,829,031.

Yajima discloses [see Fig. 1, for instance] an optical device comprising a plurality of optical modulator units [410R, 410B, 410G], each having a liquid crystal panel [411R, 411B, 441G] and a plurality of polarizer plates [413R and 414R, etc.], and a color combining optical unit [420] to combine parts of light modulated by the plurality of optical modulator units, the color combining unit having a plurality of incident surfaces, the plurality of exit polarizer plates of the plurality of optical modulator units each being separated in an optical axis direction, to have two exit polarizer plates including a first exit polarizer plate [414R, etc.] arranged at an incident side of each incident surface and a second exit polarizer plate [413R, etc.] arranged at an exit side of the liquid crystal panel.

Yajima discloses [see Fig. 6 for instance] that the first exit polarizer plates [414R, etc.] are arranged to be heat insulated from the liquid crystal panel, but does not explicitly disclose this for the second exit polarizer plates. *Numata* discloses an analogous device in which the exit polarizer plates are arranged to be heat insulated

from the liquid crystal panel and teaches that it is necessary to keep the liquid crystal element from overheating [col. 2, lines 2-6]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the exit polarizer plates arranged to be heat insulated from the liquid crystal panel, motivated by the desire to prevent the liquid crystal panel from overheating due to exposure to the heat generated in the polarizer plates (the heat is due to absorption of light).

Claim 1 is therefore unpatentable.

Regarding claim 13, *Yajima* also discloses a projector with an illumination device [20], a color separation optical system [see Fig. 1], a plurality of optical devices to form an image as recited, with the optical device being the optical device as in claim 1, so claim 13 is also unpatentable.

Each first exit polarizer plate is arranged to be thermally insulated from each corresponding second exit polarizer plate [see Fig. 6, for instance], so claims 2 and 14 are also unpatentable.

Regarding claim 12, the above is an optical device comprising a plurality of optical modulator units each having a liquid crystal panel and a plurality of exit polarizer plates arranged to be heat insulated from the liquid crystal panel, and an optical modulator unit to be passed by a greatest intensity of light among the plurality of optical modulator units includes two exit polarizer plates arranged separately in an optical axis direction [this is true of all three, so it is true of whichever has the greatest intensity of light; also, this is a functional limitation, in that using the device to display all red, all blue, or all green would change the identity of the optical modulator unit passed by the

greatest intensity of light, and the functional limitation does not affect the structure in this case]. Claim 12 is therefore unpatentable. *Yajima* also discloses a projector with an illumination device [20], a color separation optical system [see Fig. 1], a plurality of optical devices to form an image as recited, with the optical device being the optical device as in claim 12, so claim 24 is also unpatentable.

8. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yajima et al.*, US 2002/0126228 in view of *Numata et al.,* U.S. Patent No. 6,829,031 as applied above, and further in view of *Fujimori et al.,* U.S. Patent No. 6,359,721.

Yajima in view of *Numata* does not appear to explicitly disclose all the limitations of claims 6 and 18. *Numata* does, however, disclose [see Fig. 7] a first heat conductor plate [6] thermally connected to a heat conductive block [19] which his adjacently connected to the color-combining optical unit [41]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this structure, motivated by *Numata's* teaching that this provides good cooling of the part. *Fujimori* discloses an analogous device with another (quite different) structure fitting this claim language: [see Fig. 13, for instance] a first heat conductor plate [55] thermally connected to a heat conductive block [54] which is adjacently connected to the color-combining unit. *Fujimori* also discloses [see Fig. 6, for instance] a plurality of liquid crystal panel holding frames [925, etc.] being thermally joined to an optical component housing [903] supporting the color-combining optical unit. It would have also been obvious to one of ordinary skill in the art at the time of the invention to use these arrangements from

Fujimori, motivated by *Fujimori's* teaching that this provides good cooling of the parts and good structural support for the parts. Claims 6 and 18 are therefore unpatentable.

9. Claims 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yajima et al.*, US 2002/0126228 in view of *Numata et al.,* U.S. Patent No. 6,829,031 as applied above, and further in view of *Okada et al.,* U.S. Patent No. 6,781,641.

Claims 10 and 22 recite that the second exit polarizer (the first polarizer after the liquid crystal panel in the light path) has a cross transmissivity (leakage, or 100% - %absorption) set at a transmissivity greater than 50% of a total transmissivity. *Yajima* discloses that the second exit polarizer should have a high cross transmissivity ("low polarization degree"), but the only example it appears to give is 40% (60% absorption) [paragraph 0067]. *Okada* discloses an analogous device with two exit polarizers, and teaches that the equivalent of the second exit polarizer should have a cross transmissivity around 50% or between 40% and 60% [col. 4, lines 29-31]. This overlaps the claimed range; in such cases a prima facie case of obviousness exists [see MPEP 2144.05]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this range, motivated by *Okada's* teaching that this is the most desirable range so that the two exit polarizers can share the heat and light absorbed by the polarizers. Claims 10 and 22 are therefore unpatentable.

Allowable Subject Matter

10. Claims 3, 7-9, 11, 15, 19-21, and 23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the device of claim 3, in particular the limitations that for each incident surface there is a first heat conductor plate bonded to the incident surface, a first exit polarizer plate bonded to the first heat conductor plate and attached with heat insulation pins, on which is a polarizer-plate holding frame to hold a second heat conductor plate bonded with the second exit polarizer plate and a liquid crystal panel holding frame for holding the liquid crystal panel. Claim 3 would therefore be allowable if rewritten appropriately, as would claims 7-9 and 11 which depend from it. Note that claim 9 is presently withdrawn; it would be rejoined if claim 3 were rewritten appropriately.

Similarly, the prior art does not disclose the device of claim 15, which has the same limitation as claim 3, so it would be allowable if rewritten appropriately, as would claims 19-21 and 23 which depend from it. Note that claim 21 is presently withdrawn; it would be rejoined if claim 3 were rewritten appropriately.

Election/Restrictions

12. Applicant's election with traverse of species A1a in the reply filed on 1 February 2006 is acknowledged. The traversal is on the ground(s) that there is not a serious burden to the examiner. This is not found persuasive because in the opinion of the examiner, search and examination of the entire application would constitute a serious burden. The requirement is still deemed proper and is therefore made FINAL.

13. Claims 4, 5, 9, 16, 17, and 21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 1 February 2006.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew Schechter
Primary Examiner
Technology Center 2800
15 April 2006